



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,587	11/28/2005	Harumatsu Miura	T-1427	9106
802	7590	03/14/2008	EXAMINER	
PATENTTM.US			MAL,NGOCLAN'TH	
P. O. BOX 82788			ART UNIT	
PORTLAND, OR 97282-0788			PAPER NUMBER	
			1793	
			MAIL DATE	
			DELIVERY MODE	
			03/14/2008	
			PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/529,587

**Applicant(s)**

MIURA ET AL.

**Examiner**

NGOCLAN T. MAI

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 15-19, and 24-27 is/are rejected.
- 7) ☒ Claim(s) 9-14 and 20-23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/CDC)
- Paper No(s)/Mail Date 8/14/07, 6/16/05

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 1-27 are under examination.

### ***Claim Objections***

2. Claims 9-14 and 22-23 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim.

See MPEP § 608.01(n).

Accordingly, the claims 9-14, 22-23 have not been further treated on the merits.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 15-16, 20-22, 24-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Concerning claims 15-16, 22, and 24-27, the phrase "or the like" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "or the like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

Concerning claims 15-16, 20-22, and 24-27, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(c) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1-6 and 15-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Schlump (U.S. Patent No. 4,909,840).

Concerning claim 15, Schlump discloses a method of manufacturing nanocrystalline molded body, i.e., metal bulk material comprising mechanical alloying mixture of fine powders of at least one element selected from a first group consisting of Y, Ti, Zr, Hf, Nb, Mo, Ta and W

Art Unit: 1793

and at least one element selected from a second group consisting of V, Cr, Mn, Fe, Co, Ni, Cu and Pd to form a secondary powder having a nanocrystalline structure and molding the powder by conventional compression methods such as extrusion, powder forging, hot pressing, hot isostatic pressing to provide molded article, i.e., metal bulk material. See col. 1, ll. 57 to col. 2, ll. 3, and col. 2, ll. 18-40.

Concerning claims 1-6, 16 and 17, Schlump discloses that the mixture further contains at least one ingredient selected from the group consisting of Si, Ge, B and oxides, nitrides, borides, and carbides of Ti, Nb, W, Mo and V. The present of Si, B, oxides, nitrides, borides and/or carbides of Ti, Nb, W, Mo and V during mechanically alloying would result in preparing nanocrystal metal powder having high concentration in the respective component

7. Claims 1, 2, 3, 6-8, 15-19, 24-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Taguchi et al. (U.S. Patent No. 6,827,755).

Concerning claims 1-3 and 6, Taguchi et al disclose high-toughness and high-strength ferritic steel comprising nano-crystals grains of ferritic steel and oxide, carbide and nitride of at least one compound forming element exists as grain growth inhibitor between and/or in said nano-crystal grains. See col. 2, ll. 64-65, col. 6, ll. 54-58.

Concerning claim 7-8, Taguchi et al teach the high-strength and high-toughness ferritic steel contains nitrogen in the amount of 0.17 to 0.19% by mass. See Table 6.

Concerning claims 15 and 24-25, Taguchi et al teach the high-toughness and high-strength ferric steel is formed by mechanical alloying powders compound-forming elements and ferritic steel powder using a ball mill and subjecting the mechanical alloyed powders to plastic

Art Unit: 1793

deformation working, wherein the plastic deformation working is carried out by method such as extrusion or hydrostatic pressing. See col. 2, ll. 32-35, col. 3, ll. 13-23 and col. 7, ll. 52-59.

Concerning claims 16-17, Taguchi et al also teach the compound-forming elements are combined with O, C and N originally contained in the ferritic steel powder or getting mixed therein from the atmosphere to form a carbide, an oxide and a nitride, respectively in the course of consolidation of the ferritic steel powder produced by mechanical alloying. Col. 2, ll. 37-44.

Concerning claims 18 and 19, argon or nitrogen gas is introduced during mechanical alloying. See col. 7, ll. 57.

Concerning claims 26-27 Taguchi et al teach after plastic deformation, a heat treatment at 600-900 C under a hydrostatic pressure of 10 to 1,000 MPa to further enhancement of toughness.

8. Claims 2, 15-19 and 24-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Miura et al "Composition Dependence of Microstructure of Mechanically Alloyed Powders and Their Compact of High Nitrogen Cr-Mn Steels".

Concerning claims 2, 15-16, Miura et al disclose a process for preparing a nano-crystal metal bulk material, which involves steps of: mixing respective fine powders of nano-crystal metal-forming components together with a substance that becomes a nitrogen source, applying mechanical alloying (MA) to the resulting mixture using a ball mill or the like, thereby preparing high nitrogen concentration, nano-crystal metal powders, and applying to said metal powders hot forming-by-sintering treatment such as sheath rolling, thereby obtaining a high hard, strength and tough metal bulk material. See page 907, second column, II Experimental

Art Unit: 1793

Procedure. Concerning claims 17 -19, Miura et al teach the nitrogen source can be nitrogen gas or metal nitride. See page 907, col. 1.

9. Claims 20-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NGOCLAN T. MAI whose telephone number is (571)272-1246. The examiner can normally be reached on 8:30-5:00 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art Unit  
1793

n.m.

